From:	Evison, Leah (MPCA)
To:	Evison, Leah
Subject:	FW: EPA memo on GM
Date:	Monday, May 05, 2014 10:04:15 AM
Attachments:	EPA Memo re GM action level.pdf 032714_GMI_VI_Conceptually.pdf

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From: Messing, Rita (MDH)
Sent: Thursday, May 01, 2014 9:49 AM
To: Ricardo McCurley (ricardo@comogreenvillage.info)
Cc: Neve, Hans (MPCA); Evison, Leah (MPCA); Kadrie, Julie (MDH); Campbell, Fred (MPCA); Herbrandson, Carl (MDH); Hansen, Emily (MDH); Kelly, James (MDH)
Subject: FW: EPA memo on GM

Ricardo:

Attached are a memo from EPA clarifying the previous memo from Mr. Fusinski at EPA. Please look especially at the last paragraph:

The MCPA decision point of installing vapor intrusion mitigation systems at subslab soil gas exceedances of 20 µg/m3 is consistent with US EPA policy of protecting human health from TCE exposure through vapor intrusion. It is equivalent to an indoor air concentration that is within EPA's acceptable risk range for cancer risk and also meets EPA's recommended cleanup level for non-cancer risk.

The point is that the EPA number (4.3 ug/m.3 sub-slab) is a screening number and not an action number. EPA has decided that any site associated with a cancer risk greater than an "upper bound" estimate of 1 additional cancer case in 1,000,000 people exposed for a lifetime (70 years) needs to be further investigated. (The risk is calculated by extrapolation from data indicating cancers at exposures as much as 100,000 times or more higher than the screening number, and the actual risk may in fact be zero.) In Minnesota, the MPCA will generally take action if the "upper bound" cancer risk estimate is greater than 1 additional cancer case in 100,000 people exposed for a lifetime (again the actual risk may in fact be zero). For cancer, the calculated sub-slab criterion would be 43 ug/m.3. EPA might not take action unless the calculated "upper bound" cancer risk estimate is 1 additional cancer case in 10,000 people exposed for a lifetime (and again the actual risk may in fact be zero). So, based on cancer risk, EPA could decide not to take action (e.g., install mitigation) unless the sub-slab concentration is greater than 430 ug/m.3.

Note that cancer risks are accumulated over a lifetime. So, the exposures to TCE would be of concern only if they last for many decades. Most students living in the neighborhood live there for much shorter time periods, so their cancer risks at these exposure levels would be even lower, in fact vanishingly small. Nevertheless, there are people who have lived in SE Como for many decades, so they could accumulate some extra risk for cancer. This extra risk (whether 1/1,000,000 or 1/100,000 or 1/10,000) would be impossible to actually see in an epidemiological study because the "background" cancer risk is between 40 and 50 % or 4/10 to 5/10. So the "extra risk" at 1/10,000 would be 4.0001/10 which is the same as 4/10.

However, it turns out that for TCE, cancer is NOT the health effect which is most sensitive. These are effects on fetal cardiac development and effects on the immune system. The risk for these effects is NOT accumulated over decades but over much shorter time periods. In order to protect against these risks, MDH, MPCA and EPA have determined that a concentration sub-slab of 20 ug/m.3 or less is protective.

The 20 ug/m.3 sub-slab criterion being used by the MPCA is an action number, not a screening number: if the sub-slab concentration is above this number then mitigation is installed. Furthermore, MPCA and General Mills have determined that dwellings in between residences that have been given mitigation systems will be offered these systems EVEN IF their sub-slab measurements are below 20 ug/m.3.

Finally, please see the attachment indicating that the 10-fold attenuation factor assumed from sub-slab to indoor air is almost always a big underestimate. The average attenuation factor is about 700. If the MPCA and General Mills had decided to measure indoor air and only offer mitigation when indoor air was found above 2 ug/m.3 then many fewer homes would have been offered mitigation.

I realize that both sub-slab and indoor air values may vary. However, almost all testing took place in winter months, when values are expected to be highest. Thus, the protectiveness built into the sub-slab criterion for mitigation assuming a 10-fold attenuation factor, and the timing of sub-slab measurements, the protectiveness of the 2 ug/m.3 indoor air criterion, plus the care that is being taken to install and test the systems and ensure their ongoing functionality eliminates health risks.

This is a long and involved e-mail. However, I believe that writing at such length is needed given the great interest in SE Como in all of the details involved in the decision-making process.

Please feel free to contact me if you have more questions.

Best regards,

Rita

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From: Neve, Hans (MPCA)
Sent: Tuesday, April 29, 2014 12:25 PM
To: Evison, Leah (evison.leah@epa.gov); Burman, Sandeep (MPCA); Kelly, James (MDH); Messing, Rita (MDH); Hansen, Emily (MDH); Herbrandson, Carl (MDH); Olson, Edward (MPCA); Campbell, Fred (MPCA); Kadrie, Julie (MDH); Rude-Young, CoriAhna (MPCA); Brungardt, Sam (MPCA)
Subject: FW: EPA memo on GM

Rita, would you be willing to pass this on to Ricardo at SECIA. Would you consider also including in the e-mail the work that Carl has done presenting the conservative nature of the 10x attenuation factor, with the median attenuation factor being in the hundreds.

Thanks